Health IT: Support for Effective Use of Electronic Prescribing

AHRQ's mission is to improve the quality, safety, efficiency, and effectiveness of health care by:

- Using evidence to improve health care.
- Improving health care outcomes through research.
- Transforming research into practice.

Introduction

Increasing the adoption of electronic prescribing (e-prescribing) has emerged as a top priority for public and private leaders seeking to improve the quality, safety, and efficiency of health care. For example, the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) calls for rewarding Medicare providers with additional reimbursement for implementing e-prescribing and threatens financial penalties for those who do not. Furthermore, a leading Blue Cross/Blue Shield plan has made free e-prescribing technology available for all clinicians and pharmacies across North Carolina.

E-prescribing is defined as "the use of computing devices to enter, modify, review, and output or communicate drug prescriptions." Many believe that e-prescribing has the potential to inform clinical decisionmaking in prescribing and dispensing safe, clinically appropriate, and cost-effective medications by ensuring that meaningful and relevant data are communicated to the people who need it, when they need it.

Preliminary studies predict that a national shift from a paper-based system to e-prescribing could:

- Avoid more than 2 million adverse drug events annually, of which 130,000 are life threatening.
- Create cost savings of $2.7 billion resulting from reducing clinicians' phone time.
- Save the U.S. health care system $27 billion per year.

AHRQ's Role in E-Prescribing

AHRQ's health IT program has pursued a strategic goal to improve the safety and quality of medication management through the use of electronic medication management systems and technologies. To that end, since 2004, AHRQ has invested nearly $40 million in grants, contracts, and interagency agreements to establish a "real world learning lab" for e-prescribing and other technologies to improve the broader medication management process.

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AHRQ's funding has been instrumental in both establishing the foundation for e-prescribing as well as validating and understanding best practices in implementing and using this technology to impact the quality, safety, efficiency, and effectiveness of care.

AHRQ has funded e-prescribing activities in three main areas:

- Building the foundation for e-prescribing systems.

- Enabling successful implementation of e-prescribing systems.

- Assessing the impact of e-prescribing on health care quality, safety, efficiency, and effectiveness.

The following sections provide a short summary of completed and ongoing AHRQ activities in these key areas.

More detail can be found at www.healthit.ahrq.gov.

Building the Foundation for E-Prescribing Systems

AHRQ, in coordination with other public and private organizations, has funded a variety of activities fundamental to building the security, privacy, and data interoperability standards for nationwide e-prescribing.

Completed Projects

Pilot Testing of E-Prescribing Standards
(January 2006 - January 2007)

E-prescribing relies on the use of a core set of data standards for sharing and processing information. The Medicare Modernization Act of 2003 mandated pilot testing of e-prescribing standards. In partnership with the Centers for Medicare & Medicaid Services (CMS), five yearlong, multi-stakeholder consortia were awarded $7.3 million to pilot test six e-prescribing data standards, including:

- Implementing and testing the interoperability of the e-prescribing standards proposed by the Department of Health and Human Services (HHS).

- Measuring clinical and economic outcomes associated with e-prescribing (e.g., reduction of adverse drug events, provider uptake, and potential gains in efficiency).

- Systematically evaluating the findings to assess the functionality of standards and the benefits, challenges, and technical considerations for mass implementation.

- Publishing a report entitled *Pilot Testing of Initial Electronic Prescribing Standards*.

The six consortia that conducted the pilot testing represent the full spectrum of health care stakeholders, including patients, technology vendors, payers, pharmacies, and providers in settings from small physician offices to large hospitals and medical centers.

Overall, AHRQ and CMS gained enough evidence to recommend three of the initial six standards for publication and mandatory use in Medicare Part D, as prescribed by the Medicare Modernization Act. The report also concluded that three standards were not yet ready for mass adoption.

National E-Prescribing Standards Expert Meeting
(February 2008)

To gain consensus on a prioritized research and testing agenda for the e-prescribing standards that were determined not to be ready for mass adoption after the initial pilots, AHRQ funded a $100,000 project to convene a group of experts representing all sectors of the e-prescribing industry. The meeting resulted in a technical research

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plan to more accurately determine if the standards should be recommended for mass adoption.

Health Information Security and Privacy Collaboration (June 2006 – December 2007)

Establishing a common national privacy and security policy framework governing the electronic exchange of health information, especially medication information, is vital for widespread adoption of e-prescribing. AHRQ awarded $17.4 million to 33 States and one territory to gain input from State leaders and a broad range of stakeholders to assess the legal bases and variations that exist at the organization level with respect to privacy and security practices and policies on exchanging health information.

The following are reports from this project:

- *Interim Assessment of Variation of Business Practices, Policies, and State Law*. A first look at the findings of the 33 States and one U.S. territory.
- *Health Information Security and Privacy Collaboration Toolkit*. Tools and resources for facilitating privacy and security in exchanging health information.
- *Impact Analysis Report*. An analysis of the impact of the HISPC on each participating State and its approach to privacy and security.

Ongoing Projects

Electronic Prior Authorization Pilot Preparation Project (May 2008 - October 2008) Institution: Point of Care Partners, Coral Springs, FL

Electronic prior authorization, a standard to facilitate benefit checks made during e-prescribing transactions,

was one of the e-prescribing standards found not ready for widespread adoption in initial pilot testing. AHRQ funded a $55,000 project to engage the e-prescribing industry to define and develop a consensus electronic prior authorization standard. The final phase of the project involves defining the research questions and methodologies that need to be addressed by future efforts to test the electronic prior authorization standard.

Enabling the Successful Implementation of E-Prescribing Systems

A key set of AHRQ health IT program activities focuses on synthesis and dissemination of best practices for implementing e-prescribing systems and processes. Because e-prescribing systems—and the challenges associated with gaining value from them—vary based on the type of technology employed, the stakeholders involved, and the setting of care, AHRQ has funded projects in a variety of settings and patient populations.

Completed Projects

National Web Conferences on E-Prescribing (August 2007 - November 2007) Institution: AHRQ National Resource Center for Health IT, Bethesda, MD

AHRQ's National Resource Center (NRC) for Health IT has hosted three national Web conferences on best practices for implementing e-prescribing. Funded at $21,000, these conferences attracted several hundred participants from an array of health care settings.

Ongoing Projects

E-Prescribing Implementation Toolkit (April 2008 – April 2009) Institution: The RAND Corporation, Santa Monica, CA

AHRQ has funded a $1 million contract to develop, evaluate, and disseminate a step-by-step toolkit to support health care organizations in implementing e-prescribing systems. The goal of the project is to provide health care organizations with the tools and resources that they need to gain value from e-prescribing.

Assessing the Impact of E-Prescribing on Health Care Quality, Safety, Efficiency, and Effectiveness

While numerous studies predict the value of e-prescribing in improving health care quality, safety, efficiency, and effectiveness, AHRQ has funded a variety of health care organizations and collaborative projects to evaluate these estimates in the real world.

Completed Projects

Evaluating the Impact of an Ambulatory Computerized Provider Order Entry/Clinical Decision Support System on Outcomes (October 2004 - September 2007) Institution: University of Washington, Seattle, WA

AHRQ provided a $1 million grant for implementation and evaluation of a computerized provider order entry (CPOE) system with built-in clinical decision support capabilities in a 16-site ambulatory, integrated health system with 60 clinics. The project evaluated the impact of the system on organizational processes, human factors, and patient safety as measured by medication errors and adverse drug

events. Staggered rollout, iterative improvements, individual training, and real-time availability of technical assistance enabled successful adoption. Use of the system was time neutral for prescribers, and end-user feedback was positive. E-prescribing resulted in a reduction of potential medication errors from 28 percent to 9 percent.

Using IT To Improve Medication Safety for Rural Elders
(September 2004 - September 2008)
Institution: Samaritan North Lincoln Hospital, Lincoln City, OR

AHRQ provided a $1.5 million grant to evaluate the use of e-prescribing and other medication management systems to improve the health of frail, chronically ill elderly patients. The project concluded that providing evidence-based decision support and secure access to accurate, complete, and current medication information for patients and clinicians reduced medication errors. Preliminary findings from observations and interviews with pharmacy technicians, pharmacists, and residential care managers reinforced the impression that medication reconciliation in long-term care does not occur as an isolated event, but rather is integrated into broader assessments or reassessments of patients' care plans. Health IT tools need to take this work of integration into account.

Value of New Drug Labeling Knowledge for E-Prescribing
(September 2004 - August 2008)
Institution: Indiana University, Bloomington, IN

AHRQ provided a $1.4 million grant to create an open-source CPOE tool that delivers decision support functions. The grantee piloted this device to evaluate its costs and benefits to both physicians and patients through a time-series controlled trial, time-in-motion studies, and a satisfaction survey.

E-Prescribing's Impact on Patient Safety, Use, and Cost
(September 2004 - December 2007)
Institution: Massachusetts General Hospital, Boston, MA

AHRQ provided a $1.1 million grant to examine whether a statewide rollout of e-prescribing resulted in improvements in patient safety and reductions in cost. The project measured prescribing practices, formulary compliance, and patient outcomes before and after the implementation and found that e-prescribing with formulary decision support led to the use of lower priced medications. Early results also indicate that patients getting e-prescriptions had less severe potential drug/drug interactions among their dispensed medications.
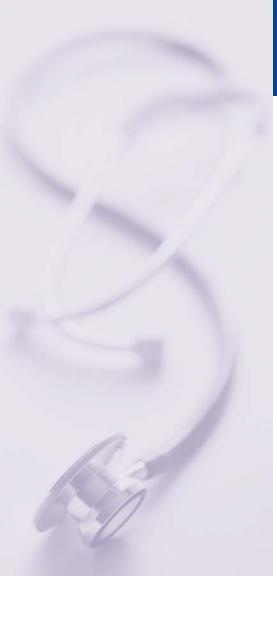
Ongoing Projects

E-Prescribing and Decision Support To Improve Rural Primary Care Quality
(September 2007 - August 2010)
Institution: Avera Health, Sioux Falls, SD

AHRQ provided grant funding to a large health system operating 28 hospitals and 116 clinics in rural and frontier areas to examine whether the use of an electronic prescribing system with clinical decision support increases patient prescription adherence, improves health outcomes in patients with hypertension, and improves the medication management process.

E-Prescribing and Electronic Transmission of Discharge Medication Lists (September 2007 – September 2010) Institution: Weill Medical College of Cornell University, New York, NY

AHRQ provided a $1.2 million grant to measure the impact of health IT on patient safety in the ambulatory setting, including what impact transitioning from a homegrown e-prescribing system to a vendor-based system has on medication errors, clinician use of the system, and communication among the hospital and the clinics.

Health Information Technology and Improving Medication Use (July 2007 – June 2010) Institution: Brigham and Women's Hospital, Boston, MA

As part of a project to inform the process of how health IT systems can be rolled out broadly, AHRQ provided $4 million in funding to evaluate the magnitude and the impact of new errors created when e-prescribing systems were implemented in ambulatory clinics.

Funded through an AHRQ Centers for Education and Research on Therapeutics grant, one subproject is entitled "The Evaluation of New Errors Created When Electronic Prescribing is Implemented."

More Information

For additional information on AHRQ projects on health information technology, go to http://www.healthit.ahrq.gov or contact the health IT staff at NRC-healthit@ahrq.hhs.gov.